What is claimed is :

1. A reduced size GPS conical shaped microstrip antenna array comprising:

(a) a first dielectric layer

(b) a plurality of square shaped antenna elements mounted on an upper surface of said first dielectric layer, said antenna elements being aligned with one another and fabricated from copper, said antenna elements being adapted to receive an RF carrier signal containing GPS (Global Positioning System) data;

(d) a first copper cross hatch pattern mounted on the upper surface of said first dielectric layer around a periphery for each of said antenna elements wherein a gap forms between the periphery for each of said antenna elements and said copper cross hatch pattern;

(e) an antenna feed network mounted on a bottom surface of said first dielectric layer, said antenna feed network having a plurality of branch transmission lines electrically connected to each of said antenna elements, each of said branch transmission lines including a pair of probes positioned perpendicular to one another underneath one antenna element of said plurality of antenna elements, one of said pair of probes for each of said branch

transmission lines having a length substantially greater than the other of said pair of probes for each of said branch transmission lines to provide for a ninety degree relative phase shift between RF signals transmitted through said pair of probes of each of said pair of branch transmission lines;

(f) a second copper cross hatch pattern mounted on the bottom surface of said first dielectric substrate in proximity to said antenna feed network;

(g) a second dielectric layer positioned below said first dielectric layer in alignment with said first dielectric layer;

(h) a third copper cross hatch pattern mounted on an upper surface of said second dielectric layer, said third copper cross hatch pattern being in alignment and substantially identical to said second cross hatch pattern; and

(i) a solid copper ground plane affixed to a bottom surface of said first dielectric layer.

2. The reduced size GPS conical shaped microstrip antenna array of claim 1 further comprising a bonding film positioned between said first dielectric layer and said second dielectric layer, said bonding film securing the bottom surface of said

first dielectric layer to the upper surface of said second dielectric layer.

3. The reduced size GPS conical shaped microstrip antenna array of claim 1 further comprising:

(a) a third dielectric layer positioned above said first dielectric layer in alignment with said first dielectric layer; and

(b) a bonding film positioned between said first dielectric layer and said third dielectric layer, said bonding film securing the upper surface of said first dielectric layer to a bottom surface of said third dielectric layer.

4. The reduced size GPS conical shaped microstrip antenna array of claim 3 wherein said third dielectric layer is a cover for said reduced size GPS conical shaped microstrip antenna array.

5. The reduced size GPS conical shaped microstrip antenna array of claim 1 wherein said plurality of antenna elements comprises first, second, third and fourth antenna elements for receiving said RF carrier signal containing said GPS data, each

of said first, second, third and fourth antenna elements having an opening located at the center thereof, the opening in each of said first, second, third and fourth antenna elements having a diameter of approximately 0.024 of an inch to reduce the size of said conical shaped microstrip antenna array.

6. The reduced size GPS conical shaped microstrip antenna array of claim 1 wherein each of said first, second and third copper cross hatch patterns comprises a plurality of 0.02 inch wide copper traces spaced apart by a 0.05 inch rectangular shaped opening.

7. The reduced size GPS conical shaped microstrip antenna array of claim 1 further comprising a plurality of copper plated through holes positioned within said first dielectric layer and a plurality of plated through holes positioned within said second dielectric layer, the copper plated through holes of said first dielectric layer aligning with the copper plated through holes of said second dielectric layer, the copper plated through holes of said first dielectric layer being EM coupled to the copper plated through holes of said second dielectric layer, wherein the copper plated through holes

of said first dielectric layer and the copper plated through holes of said second dielectric layer prevent said antenna feed network from becoming electrically coupled to said antenna elements.

8. The reduced size GPS conical shaped microstrip antenna array of claim 7 wherein the copper plated through holes of said first dielectric layer and the copper plated through holes of said second dielectric layer each comprises two hundred five copper plated through holes.

9. The reduced size GPS conical shaped microstrip antenna array of claim 1 wherein said first dielectric layer and said second dielectric layer each have an approximate thickness of 0.030 of an inch, and said third dielectric layer has an approximate thickness of 0.062 of an inch.

10. A reduced size GPS conical shaped microstrip antenna array comprising:

(a) a first dielectric layer

(b) a plurality of square shaped antenna elements mounted

on an upper surface of said first dielectric layer, said antenna elements being aligned with one another and fabricated from copper, said antenna elements being adapted to receive an RF carrier signal containing GPS (Global Positioning System) data;

(d) a first copper cross hatch pattern mounted on the upper surface of said first dielectric layer around a periphery for each of said antenna elements wherein a gap forms between the periphery for each of said antenna elements and said copper cross hatch pattern;

(e) an antenna feed network mounted on a bottom surface of said first dielectric layer, said antenna feed network having a plurality of branch transmission lines electrically connected to each of said antenna elements, each of said branch transmission lines including a pair of probes positioned perpendicular to one another underneath one antenna element of said plurality of antenna elements, one of said pair of probes for each of said branch transmission lines having a length substantially greater than the other of said pair of probes for each of said branch transmission lines to provide for a ninety degree relative phase shift between RF signals transmitted through said pair of probes of each of said pair of branch

transmission lines, said ninety degree relative phase shift providing for right hand circular polarization for plurality of antenna elements of said GPS conical shaped microstrip antenna array;

(f) a second copper cross hatch pattern mounted on the bottom surface of said first dielectric substrate in proximity to said antenna feed network;

(g) a second dielectric layer positioned below said first dielectric layer in alignment with said first dielectric layer;

(h) a third copper cross hatch pattern mounted on an upper surface of said second dielectric layer, said third copper cross hatch pattern being in alignment and substantially identical to said second cross hatch pattern; and

(i) a solid copper ground plane affixed to a bottom surface of said first dielectric layer;

(j) a first bonding film positioned between said first dielectric layer and said second dielectric layer, said first bonding film securing the bottom surface of said first dielectric layer to the upper surface of said second dielectric layer;

(k) a third dielectric layer positioned above said first

dielectric layer in alignment with said first dielectric layer; and

(l) a second bonding film positioned between said first dielectric layer and said third dielectric layer, said second bonding film securing the upper surface of said first dielectric layer to a bottom surface of said third dielectric layer wherein said third dielectric layer is a cover for said reduced size GPS conical shaped microstrip antenna array.

11. The reduced size GPS conical shaped microstrip antenna array of claim 10 wherein said first dielectric layer and said second dielectric layer each have an approximate thickness of 0.030 of an inch, and said third dielectric layer has an approximate thickness of 0.062 of an inch.

12. The reduced size GPS conical shaped microstrip antenna array of claim 10 wherein said first bonding film and said second bonding film each have an approximate thickness of 0.002 of an inch.

13. The reduced size GPS conical shaped microstrip antenna array of claim 10 wherein said third dielectric layer is a

cover for said reduced size GPS conical shaped microstrip antenna array.

14. The reduced size GPS conical shaped microstrip antenna array of claim 10 wherein said plurality of antenna elements comprises first, second, third and fourth antenna elements for receiving said RF carrier signal containing said GPS data, each of said first, second, third and fourth antenna elements having an opening located at the center thereof, the opening in each of said first, second, third and fourth antenna elements having a diameter of approximately 0.024 of an inch to reduce the size of said conical shaped microstrip antenna array.

15. The reduced size GPS conical shaped microstrip antenna array of claim 10 wherein each of said first, second and third copper cross hatch patterns comprises a plurality of 0.02 inch wide copper traces spaced apart by a 0.05 inch rectangular shaped opening.

16. The reduced size GPS conical shaped microstrip antenna array of claim 10 further comprising a plurality of copper plated through holes positioned within said first dielectric

layer and a plurality of plated through holes positioned within said second dielectric layer, the copper plated through holes of said first dielectric layer aligning with the copper plated through holes of said second dielectric layer, the copper plated through holes of said first dielectric layer being EM coupled to the copper plated through holes of said second dielectric layer, wherein the copper plated through holes of said first dielectric layer and the copper plated through holes of said second dielectric layer prevent said antenna feed network from becoming electrically coupled to said antenna elements.

17. The reduced size GPS conical shaped microstrip antenna array of claim 16 wherein the copper plated through holes of said first dielectric layer and the copper plated through holes of said second dielectric layer each comprises two hundred five copper plated through holes.

18. A reduced size GPS conical shaped microstrip antenna array comprising:

(a) a first dielectric layer

(b) a plurality of square shaped antenna elements mounted on an upper surface of said first dielectric layer, said antenna elements being aligned with one another and fabricated from copper, said antenna elements being adapted to receive an RF carrier signal containing GPS (Global Positioning System) data;

(d) a first copper cross hatch pattern mounted on the upper surface of said first dielectric layer around a periphery for each of said antenna elements wherein a gap forms between the periphery for each of said antenna elements and said copper cross hatch pattern;

(e) an antenna feed network mounted on a bottom surface of said first dielectric layer, said antenna feed network having a plurality of branch transmission lines electrically connected to each of said antenna elements, each of said branch transmission lines including a pair of probes positioned perpendicular to one another underneath one antenna element of said plurality of antenna elements, one of said pair of probes for each of said branch transmission lines having a length substantially greater than the other of said pair of probes for each of said branch transmission lines to provide for a ninety degree relative phase shift between RF signals transmitted

through said pair of probes of each of said pair of branch transmission lines, said ninety degree relative phase shift providing for right hand circular polarization for plurality of antenna elements of said GPS conical shaped microstrip antenna array;

(f) a second copper cross hatch pattern mounted on the bottom surface of said first dielectric substrate in proximity to said antenna feed network;

(g) a second dielectric layer positioned below said first dielectric layer in alignment with said first dielectric layer;

(h) a third copper cross hatch pattern mounted on an upper surface of said second dielectric layer, said third copper cross hatch pattern being in alignment and substantially identical to said second cross hatch pattern; and

(i) a solid copper ground plane affixed to a bottom surface of said first dielectric layer;

(j) a first bonding film positioned between said first dielectric layer and said second dielectric layer, said first bonding film securing the bottom surface of said first dielectric layer to the upper surface of said second dielectric layer;

(k) a third dielectric layer positioned above said first

dielectric layer in alignment with said first dielectric layer;

(l) a second bonding film positioned between said first dielectric layer and said third dielectric layer, said second bonding film securing the upper surface of said first dielectric layer to a bottom surface of said third dielectric layer wherein said third dielectric layer is a cover for said reduced size GPS conical shaped microstrip antenna array;

(m) said first dielectric layer and said second dielectric layer each have an approximate thickness of 0.030 of an inch, said third dielectric layer has an approximate thickness of 0.062 of an inch, and said first bonding film and said second bonding film each have an approximate thickness of 0.002 of an inch; and

(n) a plurality of copper plated through holes positioned within said first dielectric layer and a plurality of plated through holes positioned within said second dielectric layer, the copper plated through holes of said first dielectric layer aligning with the copper plated through holes of said second dielectric layer, the copper plated through holes of said first dielectric layer being EM coupled to the copper plated through holes of said

second dielectric layer, wherein the copper plated through holes of said first dielectric layer and the copper plated through holes of said second dielectric layer prevent said antenna feed network from becoming electrically coupled to said antenna elements.

19. The reduced size GPS conical shaped microstrip antenna array of claim 18 wherein said plurality of antenna elements comprises first, second, third and fourth antenna elements for receiving said RF carrier signal containing said GPS data, each of said first, second, third and fourth antenna elements having an opening located at the center thereof, the opening in each of said first, second, third and fourth antenna elements having a diameter of approximately 0.024 of an inch to reduce the size of said conical shaped microstrip antenna array.

20. The reduced size GPS conical shaped microstrip antenna array of claim 18 wherein each of said first, second and third copper cross hatch patterns comprises a plurality of 0.02 inch wide copper traces spaced apart by a 0.05 inch rectangular shaped opening.

21. The reduced size GPS conical shaped microstrip antenna array of claim 18 wherein the copper plated through holes of said first dielectric layer and the copper plated through holes of said second dielectric layer each comprises two hundred five copper plated through holes.